UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO.   : 6,943,724 B1
DATED   : September 13, 2005
INVENTOR(S) : Brace et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:
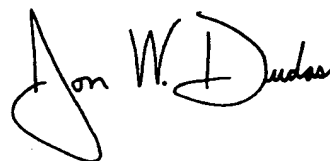
The title page, showing the illustrative figure, should be deleted to be replaced with the attached title page.

Drawings,
Fig. 8, should be deleted to be replaced with drawing sheet, consisting of Fig. 8, as shown on the attached page.

Signed and Sealed this

Thirteenth Day of June, 2006

JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) **United States Patent**

Brace et al.

(10) Patent No.: **US 6,943,724 B1**

(45) **Date of Patent:** Sep. 13, 2005

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(54) **IDENTIFICATION AND TRACKING OF MOVING OBJECTS IN DETECTED SYNTHETIC APERTURE IMAGERY**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/645,365**

(22) Filed: **Aug. 21, 2003**

Related U.S. Application Data

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(51) Int. Cl.^{7} **G01S 13/90**
(52) U.S. Cl. .... 342/25 B; 342/25 R; 342/25 A; 342/25 P; 342/89; 342/90; 342/175; 342/195; 342/196
(58) Field of Search .... 342/25 R–25 F, 342/25, 27, 28, 89, 90, 118, 145, 147, 158, 342/159–164, 175, 176, 179, 190–197; 382/100, 382/103

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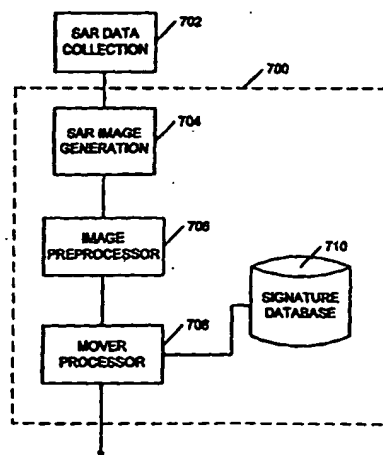
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(57) **ABSTRACT**

A method of tracking a moving object in an image created by use of a synthetic aperture includes identifying a plurality of receive phase centers for an image collector, obtaining a synthetic aperture image using the plurality of receive phase centers, and reading a signature of the moving object based on the synthetic aperture image, where the reading of the signature includes identifying, in the synthetic aperture image, as a function of image collection time, a presence of the moving object. The reading of the signature may also include identifying a changing position of the moving object, and may include associating a plurality of range difference values with respective ones of the plurality of phase centers. A signature of a scatterer may be formed using only its associated ΔR-versus-time profile. The presence of a mover in the image may be determined by filtering the image to detect all or part of a signature, or by using one or more signatures to train a neural network to observe the mover directly.

49 Claims, 9 Drawing Sheets